Validation of the Measure of Delinquent Social Identity among youth offenders in the UK

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Abstract

The current study aimed to develop and validate the Measure of Delinquent Social Identity (MDSI). Dimensionality and construct validity of the MDSI was investigated in a sample of youth offenders ($N = 536$). Four alternative models of the MDSI were estimated using M*plus*. The model identified as being the best fit for the data was a bifactor model with three dimensions (cognitive centrality, in-group affect, in-group ties), while controlling for the general factor. The three subscales differentially correlated with criminal friend index, self-esteem, parental attachment and peer rejection. Limitations and advantages, including practical implications, of the current research are discussed.

Key Words: Delinquent social identity; The Measure of Delinquent Social Identity; Bifactor modelling; Youth Offending Team population; Youth Offender

The construct of social identity is viewed as multidimensional, due to its complex nature combining emotional and cognitive aspects (Cameron, 2004; Tajfel, 1978). Measures of social identity have therefore tried to incorporate the multidimensionality of the concept to develop a valid measure, yet not all dimensions were adequately represented. The three key areas which were focused on were: awareness of group membership, group evaluation, and emotional aspects of belonging (Brown, Condor, Mathews, Wade, & Williams, 1986; Hinkle, Taylor). One of the more recent and widely used measures of social identity was established by Cameron (2004). The measure consists of three subscales: cognitive centrality, in-group ties and in-group affect. Cognitive centrality refers to the psychological prominence and importance of belonging to the social group based on the individuals' thought processes, corresponding to the concept of self-categorization. In-group affect explains the degree of positive feelings the individual has towards the group and its members. In-group ties relates to the perceived bond, i.e. emotional connection and loyalty, the individual has with the group and its members (Jackson 2002).

Criminal Social Identity Model

In 2003, Walters began to explore social identity within offenders by adapting Cameron's (2004) Social Identity Scale. However, there has been little advancement in this research field, until recently. Expanding on the theory of Criminal Social Identity (CSI; Boduszek & Hyland, 2011), Boduszek, Dhingra and Debowska (2016b) proposed the integrated psycho-social model of CSI (IPM-CSI), which is based upon empirically tested theories of the origins of CSI. The IPM-CSI is a multistage model based upon four concepts; (1) an *identity crisis* that results in weak bonds with society, peer rejection, and is associated with poor parental attachment and supervision; (2) *exposure to a criminal/antisocial environment* in the form of associations with criminal friends before, during, and/or after incarceration; (3) *a need for identification with a criminal group* in order to protect one's self-

esteem and (4) the *moderating role of personality traits* in the relationship between criminal/antisocial environment and the development of CSI.

Boduszek, Adamson, Shevlin, and Hyland (2012) developed the Measure of Criminal Social Identity (MCSI) specifically for use on offender populations. Using the same principle as Cameron (2004), Boduszek et al. (2012) devised an eight-item self-report measure, incorporating the three subscales and concepts as in Cameron's (2004) measure (cognitive centrality, in-group affect and in-group ties). Responses are recorded on a 5-point Likert scale (1= *"strongly disagree"* to 5 = *"strongly agree"*), with scores ranging from 8 to 40. Using confirmatory factor analysis, Boduszek et al. (2012) confirmed that a three-factor model was the best fit for the data. In support of this, a study utilising a sample of offenders from three different countries (N = 1171) confirmed the three-factor model as the best fit (Sherretts & Willmott, 2016). Boduszek et al. (2012) identified that high scores on the MCSI indicate that criminal identity is crucial for an individual's self-concept. Individuals with increased MCSI scores are likely to approve of and behave in a manner consistent with the group norms, even in the absence of other group members.

Studies utilising the MCSI explored correlations between the MCSI facets and external factors. This allowed exploration of the predictive factors of CSI, which is important to the prevention and intervention of developing a CSI. Early research using a sample of 312 male adult reoffenders incarcerated in maximum security Prison in Poland, identified that higher scores on cognitive centrality were associated with increased self-esteem (Boduszek et al., 2013b) and that criminal friend index was significantly positively associated with all three dimensions of CSI (Boduszek, Hyland, Bourke, Shevlin & Adamson, 2013a). Increased scores on in-group ties facet were also found to serve as a protective factor against suicide ideation within a sample of 415 imprisoned juvenile offenders (Shagufta, Boduszek, Dhingra, & Palmer, 2015). Boduszek, Dhingra and Debowska (2016a) utilised 126 male juvenile offenders

from Pakistan. Using correlational analysis, they reported a significant positive correlation between CSI and criminal friends index, however, the relationship between the separate dimensions of CSI and criminal friends index was not reported. In contrast to Boduszek et al. (2016), Sherretts, Boduszek and Debowska (2016) found, among 501 male and female offenders incarcerated in three prisons in Pennsylvania State, no direct relationship between any of the dimensions of CSI and criminal friend index. Additionally, in-group ties dimension was related with the female gender, indicating that women are more likely to form stronger bonds and identification with in-group members than males because of their greater need to be an accepted and supported member of a group (see Brown & Lohr, 1987; Kiesner, Cadinu, Poulin, & Bucci, 2002; Newman, Lohman, & Newman, 2007).

It was recognised that, while useful across different populations, the MCSI has limitations. Inconsistent research findings have been presented regarding the internal consistency (as measured using Cronbach's alpha) of the three subscales and the MCSI total score; ranging from critical (Sherretts *et al*., 2016), acceptable (Boduszek, Dhingra, & Debowska, 2016; Sherretts *et al*, 2016), good (Boduszek, Debowska, Dhingra, & DeLisi, 2016a), to strong (Boduszek, Adamson, Shevlin, Hyland, & Bourke, 2013a). It is also argued that the MCSI is not consistent across different populations. More specifically, whereas most factor loadings for the scale items were strong in Sherretts and Willmott's (2016) study, some factor loadings for the U.S. and Pakistani samples were below the critical value (< .40). Consisting only of eight items, the MCSI may be insufficient to reflect three latent factors (cognitive centrality, in-group affect, and in-group ties) of such a complex psychological construct. It was thus suggested that the MCSI should be revised and extended in order to increase its reliability and provide a better coverage of the theoretical construct (as recommended by Hair, Black, Babin, & Anderson, 2010).

Development of the Measure of Criminal Social Identity – Revised (MCSI-R)

CSI appears to be a crucial concept within the criminal justice system and hence further research into developing a reliable and valid measure of CSI was warranted (e.g., Boduszek *et al*., 2013c; Shagufta *et al*., 2015; Sherretts *et al*., 2016). Boduszek and Debowska (2017), using a systematically selected sample of 2,192 male adult prisoners, developed a revised version of the MCSI, the MCSI-R, whereby the content was extended in order to better reflect the three CSI factors (cognitive centrality, in-group affect, and in-group ties). Item generation for the MCSI-R relied on the theoretical conceptualisation of CSI and its three dimensions, as well as discussions with a panel of experts. The new 18-item scale includes eight original items of the MCSI, with each dimension measured with six items and responses indexed on a 5-point Likert scale (1 = *"strongly disagree"*, 5 = *"strongly agree"*). Confirmatory factor analysis revealed a bifactor model, with the aforementioned three factors, was the best fit for the data. Good composite reliability of the three MCSI-R dimensions was also established. Further, through regression analyses, a significant positive correlation between cognitive centrality and in-group ties with prisonization; a significant negative correlation between cognitive centrality and self-esteem; a significant positive relationship between in-group ties and self-esteem; and a significant positive relationship between cognitive centrality and in-group ties with violent offending. The only significant predictor of number of incarcerations was the in-group ties factor. This suggests that the strength and type of interaction between external variables and CSI varies according to the CSI dimension. Boduszek and Debowska identified a need to validate the MCSI-R among female offenders, youth offenders, inmates from different cultural backgrounds, as well as non-incarcerated criminal samples in order to verify its factorial invariance. Further, they also noted that future studies should control for other factors associated with in-group affect, since in-group affect dimension did not form any significant correlations with external criteria.

The current study

Although the MCSI-R appears to be a valid measure of CSI among adult male prisoners, the instrument is in need of validation with other offender samples, particularly youths, female and non-incarcerated offenders. However, not all MCSI-R items designed with adults in mind may be appropriate for use with youths. Consequently, the first objective of the current study was to adapt the MCSI-R for youth offenders and the resultant measure will be referred to as the Measure of Delinquent Social Identity (MDSI). The second objective was to investigate the factor structure of the MDSI using confirmatory factor analysis. In line with Boduszek and Debowska's (2016) recommendations, a comprehensive approach to the assessment of scale dimensionality was adopted by testing four competing models, including bifactorial solution. Finally, the internal consistency of the scale using composite reliability was assessed (see Boduszek & Debowska, 2016; Debowska, Boduszek, Kola, & Hyland, 2014; Sherretts & Willmott, 2016) and the differential predictive validity of the MDSI factors was explored.

Method

Sampling procedure

An opportunistic sampling procedure was applied in the present research. Youth offending teams (YOTs) within the Yorkshire area were approached, of which five teams agreed to take part in the research. Printed self-reported anonymous surveys were delivered by the authors to all YOTs. Data collection took place during one to one sessions held between the youth offender and their youth worker. The youth workers, trained by the authors, clarified the nature and purpose of the study, explained that data collection was anonymous, and provided a summary of the informed consent to all participating youth offenders. To minimise sampling bias and maximise the generalisability of findings, participants were encouraged to complete the survey in the presence of their youth worker. This allowed the youth offender and their worker to discuss the content of the survey. The youth workers had already developed a

professional relationship with their youth offenders, encouraging an open and honest approach. Given youth offenders' standing as a vulnerable population and the potential that they may feel compelled to participate, it was made clear both in the consent form and verbally that participation was voluntary, without any form of reward. Youth offenders consenting to participate were instructed to place completed surveys in envelopes and return them to their youth worker, or their youth worker would do this on their behalf. Completed surveys were collected from all participating YOTs by the authors.

Sample

The only inclusion criterion was that participants were currently serving a sentence with the YOT and were aged between 12 and 17 years old. Although the YOT engages with young persons from the age of 10, it was deemed that the nature of the questionnaires could cause some unnecessary discomfort or distress to those under the age of 12. They could also struggle to understand certain concepts. The authors approached $N = 624$ youth offenders in total and $N = 536$ returned completed surveys (response rate = 85.9%). There was no missing data, which is likely due to youth workers assisting youth offenders in the completion of the survey. Therefore, $N = 536$ of youth offenders were included in the current analysis (age range from 12 to 17, $M = 15.26$, $SD = 1.13$, $Mdn = 15$, and Mode = 15). The sample comprised of $n = 348$ (64.9%) males and $n = 188$ (35.1%) females. Two hundred and three ($n = 203$, 37.9%) participants were living with one parent, 137 (25.6%) living in a care home, 86 (16%) living with both parents, 54 (10.1%) living in foster care, 34 (6.3%) living with grandparents, 12 (2.2%) living without parents and 10 (1.9%) living with step parents.

Measures

The Measure of Delinquent Social Identity (MDSI) is adapted from the MCSI-R (Boduszek & Debowska, 2017). The MCSI-R consists of 18 items (six for each dimension of

CSI) and responses are measured on a 5-point Likert scale (1= *strongly disagree* to 5 = *strongly agree*). In the development of the MDSI, discussions took place with a panel of professionals, consisting of youth workers, YOT managers, and a mental health worker based at the YOT. Based on the panel's advice, the wording of some MSCI-R items was altered to be more adaptable to the age group of the participants and the number of items was reduced by one per each dimension, due to the likely short attention span of those under 18 years of age. Therefore, the MDSI consists of 15 items scored in the same direction. The Likert scale was also reduced to 4 points rather than 5. The proposed scale was initially administered to N = 10 youth offenders to test their ability and understanding in completion of the measure. Participating youth offenders provided feedback on item comprehension and response format. Generally, youth offenders understood the content but had difficulties with two items. As such, the problematic items were re-written to increase their clarity. The final version of the MDSI consists of 15 items scored on a 4-point Likert scale (1= *completely disagree* to 4 = *completely agree*). Scores range from 15 to 60, with higher scores suggesting enhanced levels of delinquent social identity. The scale consists of three subscales: cognitive centrality (five items) subscale measures the psychological salience of a delinquent's group identity; in-group affect (five items) subscale measures a delinquent's felt attitude toward other in-group criminals; and in-group ties (five items) subscale assesses the level of personal bonding with other delinquents.

Self-Esteem Measure for Delinquents (SEM-D) is adapted from the Self-Esteem Measure for Prisoners SEM-P (Debowska, Boduszek, & Sherretts, 2017). The SEM-P is an 8-item self-report measure assessing self-esteem among incarcerated adult populations. The measure consists of two subscales: prison-specific self-esteem (4 items), looking at self-esteem in a specific context, and personal self-esteem (4 items), inquiring into self-esteem in a context-free manner. Responses are indexed on a 4-point Likert scale (1 = *never*, 4 = *always*). The

items of the measure were adapted to suit the non-prison population and youth age group. Due to this, one of the items was removed as it was not deemed suitable for the sample population. Scores for the total scale range from 7 to 28, with higher scores indicating increased levels of self-esteem.

The Measure of Criminal Attitudes and Associates (MCAA; Mills & Kroner, 1999) is a two-part self-report measure of associations with criminal friends and criminal thinking style. For the purpose of this study only Part A will be used. Part A of the measure intends to quantify criminal associations. Participants are asked to recall three individuals with whom they spent most of their time and then answered four questions regarding the degree of criminal involvement of their associates: (a) "Has this person ever committed a crime?", (b) "Does this person have a criminal record?", (c) "Has this person ever been to prison?", and (d) "Has this person tried to involve you in a crime?". This measure is referred to as the Criminal Friend Index, calculated by assigning 1 through 3 to the amount of time spent with each friend (1 = *not a lot*, 2 = *quite a lot*, 3 = *lots of time*). That number is then multiplied by the number of "yes" responses to the four questions of criminal association. All answers are summed as the Criminal Friend Index.

Peer Rejection (Mikami, Boucher, & Humphreys, 2005) is a 4-item self-report/retrospective inventory with a 5-point Likert scale response format ranging from a positive (5) to a negative (1) answer, with one reverse-scored question. Thus, the possible total score can range from a minimum of 4 to a maximum of 20, with higher scores reflecting more positive peer relations and lack of rejection. Participants are asked to indicate the number of peers they like versus dislike in the class they attend (Sample question: "How many students in your class did you get along with?"). In addition, participants are asked to estimate the number of peers who respected them versus those who tended to pick on them (sample question: "How many students in your class teased you, put you down, or picked on you?").

Parental attachment (Ingram et al., 2007) is a 9-item self-report measure of the nature of the relationship between offenders and their parents, asking questions about both positive and negative aspects of attachment to parents. Participants were asked how often they felt each statement was true (e.g., positive relationship "They support my goals and interests"; negative relationship "They ignore what I have to say"). Answers were based on a 4-point Likert type scale ranging from 1 (*not at all*) to 4 (*very much*). Thus, the possible total score can range from a minimum of 9 to a maximum of 36, with higher values indicating stronger parental attachment.

Demographics Questionnaire. Further to the above, the following data was obtained: age, gender and living condition (with both parents, with one parent, without any caregivers, with step parents, with grandparents, with foster parents, in a care home).

Analytical procedure

The dimensionality and construct validity of the MDSI was investigated using traditional CFA techniques and confirmatory bifactor analysis (see Reise, Moore, & Haviland, 2010). Four alternative models of the MDSI were specified and tested using M*plus* version 7.4 (Muthén & Muthén, 1998-2015), with weighted least squares means and variance adjusted (WLSMV) estimation.

Model 1 is a one-factor solution where all 15 MDSI items load onto a single latent factor of delinquent social identity. Model 2 is a correlated two-factor solution where items load on cognitive centrality factor (items 1, 2, 3, 4 and 5) and affective traits (all remaining items) factor (this solution was suggested by Jackson, 2002). Model 3 is a correlated three-factor solution where items load on cognitive centrality factor (items 1, 2, 3, 4 and 5), in-group affect factor (items 6, 7, 8, 9 and 10), and in-group ties factor (items 11, 12, 13, 14 and 15) (this solution was suggested by Cameron, 2004). Model 4 (see Figure 1) is a bifactor

conceptualisation with one general factor of delinquent social identity and three subordinate factors described in Model 3. Considering bifactor conceptualisation is important because it assists with assessing the validity of a single general factor, while also acknowledging and incorporating aspects of multidimensionality (Boduszek & Debowska, 2016).

The overall fit of each model and the relative fit between models were assessed using a range of goodness-of-fit statistics: the $\chi 2$ statistic, the Comparative Fit Index (CFI; Cronbach, 1990), and the Tucker Lewis Index (TLI; Tucker & Lewis, 1973). For CFI and TLI, values above 0.95 indicate good model fit (Bentler, 1990; Hu & Bentler, 1999). In addition, the Root Mean Square Error of Approximation (RMSEA; Steiger, 1990) with 90% confidence interval is presented. Ideally, this index should be less than 0.05 to suggest good fit however, values equal to or less than 0.08 are acceptable (Bentler, 1990; Hu & Bentler, 1999). Furthermore, the Weighted Root Mean Square Residual (WRMR) was used to evaluate the alternative models, with the smaller value indicating the best-fitting model.

Alpha coefficients as indicators of internal consistency have been criticised within a latent variable modelling context due to their reliance on both the number of items tested as well as correlations between them (see Cortina, 1993; Raykov, 1998). Thus, this research assessed the internal reliability of the MDSI using composite reliability (for procedure see Raykov, 1997; for application in empirical research see Boduszek, Dhingra, Hyland, & Debowska, 2015; Debowska *et al.,* 2014). Values greater than .60 are generally considered acceptable (Diamantopoulos & Siguaw, 2000).

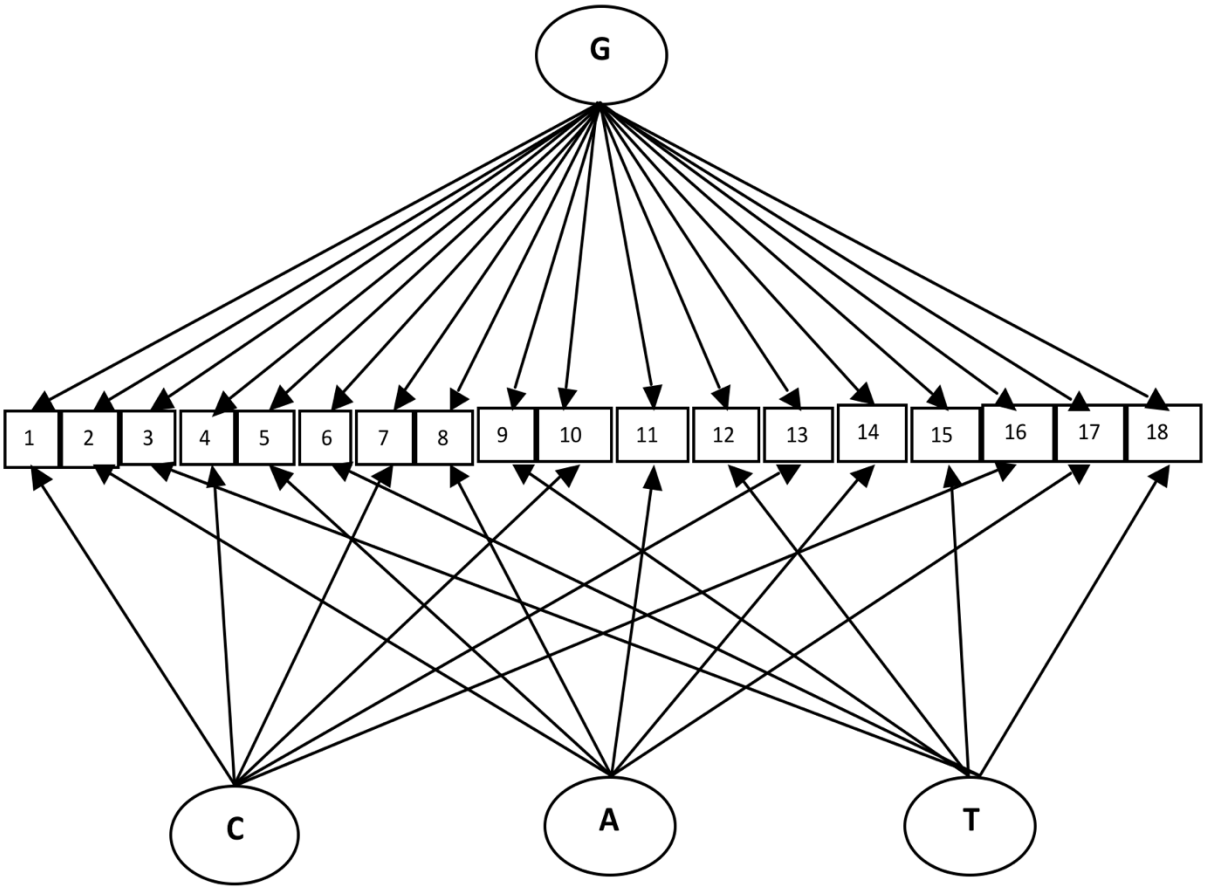

Figure 1. Bifactor solution of the MDSI-R (G = general factor of CSI; C = cognitive centrality; A = In-group affect; T = In-group ties).

Results

Descriptive statistics for three MDSI factors, criminal friend index, attachment, rejection and self-esteem are presented in Table 1.

Table 1

Descriptive Statistics for the MDSI Factors, Criminal friend index, Attachment, Rejection and Self-esteem

Variables	*M*	*SD*	*Mdn*	Observed Min.	Observed Max.
Cognitive centrality	13.73	3.02	14	5	20
In-group affect	13.80	2.70	14	5	20
In-group ties	14.48	3.07	15	5	20
Criminal Friends Index	19.37	5.66	19	4	33
Attachment	19.70	6.03	18	9	36
Rejection	11.51	2.34	11	6	19
Self-esteem	15.62	2.73	15	7	22

Fit indices for four alternative models of MDSI are presented in Table 2. One-factor model, correlated two-factor model, and correlated three-factor model were rejected based on the RMSEA statistic (value above .08). Bifactor model of the MDSI provides the best fit to the data based on all statistics (CFI = .98, TLI = .97, RMSEA = .08 [90%CI = .07/.09], WRMR = 1.76).

Table 2

Fit Indices for Four Alternative Models of the MDSI

Models	χ^2	***df***	**CFI**	**TLI**	**RMSEA**	**90% CI**	**WRMR**
1. One-factor	1335.53	90	0.95	0.95	0.10	0.09-0.11	3.01
2. Correlated 2 factors	1164.17	89	0.96	0.96	0.09	0.08-0.10	2.78
3. Correlated 3 factors	1140.54	87	0.97	0.96	0.09	0.08-0.10	2.74
4. Bifactor	759.42	72	0.98	0.97	0.08	0.07-0.09	1.76

Note. CFI = Comparative Fit Index; CI = Confidence Interval; *df* = degrees of freedom; RMSEA = Root-Mean-Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; TLI = Tucker Lewis Index; χ^2 = chi square goodness of fit statistic. * Indicates χ^2 are statistically significant ($p < .05$).

The appropriateness of the bifactor model of the MDSI can also be determined based on statistically significant factor loadings (Table 3). Inspection of the factor loadings for the three delinquent social identity factors provides imperative evidence regarding the correctness of including these latent factors in the scoring of the MDSI. Most items loaded more strongly on each of the three delinquent social identity factors and less strongly on general factor. Items 1, 2 and 5 (but not items 3 and 4) loaded more strongly on cognitive centrality than the general factor. Items 7, 9 and 10 (but not items 6 and 8) loaded more strongly on in-group affect than the general factor. Items 11, 12 and 15 (but not items 13 and 14) loaded more strongly on in-group ties than the general factor. This indicates the supremacy of the three factors of delinquent social identity over the general factor in the conceptualisation of the factor structure of the MDSI. These results advocate that the delinquent social identity is composed of three subscales (cognitive centrality, in-group affect, and in-group ties) while controlling for the general factor.

Table 3

Standardized Factor Loadings for the Three MDSI Factors (C = Cognitive centrality, A = In-group affect, T = In-group ties) and General Factor (G)

MCSI-R items	**G**	**C**	**A**	**T**
1. I have a strong sense of security because I personally know people who have broken the law	.67***	.70***		
2. It doesn't bother me that I am/ was involved in antisocial acts	.16	.99***		
3. Most of my opinions and views are similar to those who break the law	.66***	.49***		
4. I get respect from others because I was involved in antisocial activities	.72***	.53***		
5. I'm tougher than the average person because I'm not afraid to break the law from time to time	.20	.92***		
6. I share my personal experiences with others who break the law	.56***		.41***	
7. I care about my friends who break the law	.63***		.63***	
8. Being with my friends who break the law makes me feel stronger	.70***		.55***	
9. I feel comfortable when I am with my friends who break the law	.51***		.60***	
10. When I am with my friends who break the law, I feel I belong somewhere	.37**		.77***	
11. I have a lot in common with other people who have been involved in antisocial acts	.34***			.87***
12. I feel close to other people who have been involved in antisocial acts	.22*			.92***
13. I find it easy to make friends with other people who have been involved in antisocial acts	.71***			.64***
14. I find it relatively easy to get close to those involved in some antisocial activities	.64***			.63***
15. I'm there for my friends even if they have committed a crime	.56**			.65***

Note. Factor loadings are statistically significant at * $p < .05$; ** $p < .01$; *** $p < .001$

The correlations between the three delinquent social identity factors were high (cognitive centrality and in-group affect $r = .83$; cognitive centrality and in-group ties $r = .83$; in-group affect and in-group ties $r = .85$), which indicates a significant overlap between the variables. Boduszek and Debowska (2016; see also Carmines & Zeller, 1979) suggested that when the best model fit is multidimensional and some factors are highly correlated ($r \geq .50$), a differential predictive validity has to be established in order to verify whether the dimensions are associated differentially with external variables. Table 4 presents the outcome of regression analyses. Based on the results, cognitive centrality and in-group affect form positive significant correlations with criminal friend index, whereas a negative significant relationship is observed between in-group ties and criminal friend index. Both in-group ties and in-group affect associated negatively with self-esteem, whereas cognitive centrality forms a positive correlation with self-esteem. Cognitive centrality and in-group affect are significant predictors of self-esteem, whereas in-group ties do not significantly predict self-esteem. Cognitive centrality and in-group affect form negative significant correlations with parental attachment, whereas a positive significant relationship is observed between in-group ties and parental attachment. Cognitive centrality and in-group ties form positive correlations with peer rejection, whereas a negative significant relationship is observed between in-group affect and peer rejection. Both cognitive centrality and in-group affect form significant predictors of peer rejection, whereas in-group ties is not a significant predictor of peer rejection. These results confirm that cognitive centrality, in-group affect, and in-group ties should be included as separate subscales in the MDSI.

Table 4

Associations between the Three MDSI Factors and External Variables

Variable	Crim friend (R^2 = .23) β (95% CI)	Self-esteem (R^2 = .16) β (95% CI)	Att (R^2 = .16) β (95% CI)	Rej (R^2 = .10) β (95% CI)
Cognitive Centrality	.27*** (.12/.42)	.17* (.01/.32)	-.37*** (-.53/-.22)	.16* (.00/32)
In-group Affect	.48*** (.33/.64)	-.49*** (-.66/-.33)	-.26** (-.42/-.10)	-.47*** (-.64/-.30)
In-group Ties	-.30*** (-.46/-.15)	-.04 (-.20/.13)	.25** (.09/.42)	.04 (-.13/.21)

Note. Att = Parental attachment; Crim friend = Criminal friend index; Rej = Peer rejection
**$p < .01$, *** $p < .001$

Internal reliability of the MDSI factors was investigated using composite reliability instead of Cronbach's alpha, as suggested by Boduszek and Debowska (2016; see also Raykov, 1997). Composite reliability was calculated using the following formula:

$$CR = \frac{\left(\sum \lambda_i\right)^2}{\left(\sum \lambda_i\right)^2 + \sum Var\left(\varepsilon_i\right)}$$

where CR = reliability of the factor score, λ_i = standardized factor loading, and $Var(\varepsilon_i)$ = standard error variance. Results suggest that all three delinquent social identity factors (cognitive centrality = .86, in-group affect = .73, and in-group ties = .86) and general factor (.85) demonstrate good internal reliability.

Discussion

Existing research indicates that criminal social identity (CSI) correlates with various psychosocial and mental health factors, such as self-esteem, suicidal ideation, and violent offending (e.g., Boduszek *et al*., 2013c; Boduszek & Debowska, 2017; Shagufta *et al*., 2015). Such research is pertinent to prison services, including the national offender management service (NOMS) in the United Kingdom, as theoretical underpinnings can be utilised in the development of intervention programmes and risk assessments to be administered in prisons and the community. While Boduszek and Debowska (2017) devised a reliable and valid measure of CSI for adult male offenders, such measures have not been validated with youth offenders or females. In considering that existing risk assessments and offender behaviour programmes differ for youth offenders compared with adult offenders, the aim of the current study was to adapt the Measure of Criminal Social Identity – Revised (MCSI-R) for youths, resulting in the development of the Measure of Delinquent Social Identity (MDSI). Another aim was to validate the MDSI as well as assess the differential predictive validity of its three dimensions.

Researchers have argued that, when assessing construct validity and dimensionality of a concept, more than one solution should be tested as this explores the true nature of the depth of the measure (Boduszek & Debowska, 2016). In the current study, four alternative models of the MDSI (a one-factor model, two-factor model, three-factor model, and a bifactor model with three grouping factors) were investigated, using confirmatory factor techniques. Results indicated that the only acceptable solution (as shown by all fit statistics) for the 15-item MDSI was the bifactor model with three grouping factors (cognitive centrality, in-group affect, and in-group ties), while controlling for a general factor. The three grouping factors explained the majority of covariation and hence were utilised as the basis for constructing the subscales of the measure (see Reise *et al*., 2010). As aforementioned, bifactor conceptualisation is important

because it assists with assessing the validity of a single general factor, while also acknowledging and incorporating aspects of multidimensionality (Boduszek & Debowska, 2016). Thus, this approach to data modelling encompasses the complex, multidimensional psychological concept of CSI, which is in line with Boduszek and Debowska's (2017) MCSI-R.

The three MDSI facets were found to be highly associated (ranging from .83 – to .85) with one another, indicating that they may measure the same concept (Carmines & Zeller, 1979). Thus, in line with Boduszek and Debowska's (2016) recommendations, a test of differential predictive validity was applied to identify whether the three dimensions of MDSI correlate differently with external factors. Indeed, the present results demonstrated that the three delinquent social identity factors correlated differentially with external measures, confirming their conceptual distinctiveness. Specifically, cognitive centrality and in-group affect associated significantly with criminal friend index in the positive direction, indicating that associations with criminal friends may enhance identification and an emotional attachment (sense of belonging) with other delinquents. In contrast, in-group ties associated negatively with criminal friend index, indicating that youths with fewer friends may value the friendships they develop more, resulting in stronger bonds with them. Conversely, previous findings failed to identify a significant correlation between criminal friend index and CSI (Sherretts et al., 2016), whereas other findings revealed a significant positive relationship between criminal friend index and all three dimensions of CSI (Boduszek et al., 2013b). Such contrasts may be due to differences in samples recruited, highlighting the importance of validating measures within different populations.

It has been proposed that feeling part of a group can lead to a sense of belonging somewhere and, as a result, increase self-esteem (Tajfel & Turner, 1979). In support of this, a recent study identified a positive relationship between self-esteem and in-group ties (Boduszek

& Debowska, 2017). However, it was also demonstrated that cognitive centrality CSI dimension forms an association with *negative* self-esteem, indicating that identifying with other offenders lowers self-esteem (Boduszek et al., 2013b; Boduszek & Debowska, 2017). The latter finding is supportive of theories suggesting that self-esteem is generally lowered among low-status group members (Ellemers et al., 1999). In the current study, we reported a significant relationship between in-group affect and negative self-esteem, indicating that positive emotional valence of belonging to a delinquent group does not increase self-esteem among youth offenders. The measure of self-esteem utilized in the current research reflects a person's subjective emotional evaluation of one's self-worth in the prison context (prison-specific self-esteem) as well as outside of any context (personal self-esteem). Therefore, it may be that the above association was affected by the inclusion of personal self-esteem items, indicating that a delinquent's positive feelings towards other delinquents do not protect them against feeling inferior to other high-status group members. This supposition should be explored further by testing associations between in-group affect and delinquent self-esteem as well as personal self-esteem separately. Further, a significant positive relationship between self-esteem and cognitive centrality was found suggesting that identifying with other youth offenders increases self-esteem. The disparity in findings surrounding self-esteem and cognitive centrality among youth and adult populations may be due to the differences in cognitive abilities between the two groups. More specifically, it appears that younger individuals who strongly identify with other offenders may glamorize crime, which can be affected by the exposure to appealing crime fiction and violent video games. As such, belonging to a criminal group can appear desirable to them, leading to positive self-esteem. Future research should aim to empirically explore these suppositions.

Additionally, cognitive centrality and in-group affect associated with parental attachment in a negative direction. These results demonstrate that weak parental attachment

may increase identification and emotional attachment with other delinquents, which may be an attempt to replace an emotional void by youngsters who do not feel loved by their caregivers. In line with the IPM-CSI (Boduszek et al., 2016), this suggests that a positive relationship with parental figures is crucial for preventing the development of CSI. Interestingly, in-group ties formed a positive association with parental attachment. One possible explanation of this result is that individuals who positively bond with their parents, use the same processes to bond with other individuals, even in criminal settings. Further, cognitive centrality was associated with positive peer relations, whereas in-group affect associated with peer rejection. This indicates that peer rejection is especially damaging at affective, but not cognitive, level and may increase an emotional attachment to other delinquents.

When considering the results of the current study the following limitations ought to be considered. First, the current sample consisted of youth offenders within the Yorkshire area and hence future studies should seek to validate the MDSI among youth offenders from different social and cultural backgrounds. Although the present study incorporated females, we could not test for factor invariance as the sample of females was not large enough. Therefore, it is recommended to incorporate a larger sample of females in future research. Second, the present study aimed to limit response bias by encouraging participants to undertake the self-report measures in the presence and with the assistance of their youth offender worker. Although, this would limit some of the response bias, it did not eradicate it, as youth offender workers reported that some participants completed the study by themselves. Third, the current study was cross-sectional and therefore temporal order of the associations reported cannot be assured. Longitudinal studies are therefore required to offer support to the temporal order.

Despite the aforementioned limitations, the current research expands on existing literature in the area of criminal social identity. An adapted version of MCSI-R, the MDSI, was developed and validated for youth offenders. It was shown that the MDSI scores are best

captured by three grouping factors (cognitive centrality, in-group affect, and in-group ties), whilst controlling for a general factor. The three grouping factors, although highly correlated with one another, evidenced a good differential predictive utility for criminal friend index, self-esteem, parental attachment and peer rejection. This highlights the importance of considering the predictors and consequences of delinquent social identity when implementing risk assessments and interventions within the NOMS.

This is of particular importance within the youth offender population where risk factors, such as parental attachment and peer rejection are dynamic factors which can still be altered. Therefore, treatment for youth offenders should target two key areas: relationships and self-esteem. Positive relationships should be encouraged by (*a*) developing positive attachments with parent(s)/guardian(s) in order to prevent formation of criminal cognitive structures and emotional attachments with offenders and (*b*) encouraging integration with pro-social friends at school to prevent peer rejection and the development of emotional attachments with offenders. The MDSI, which is free and easy to administer, can be used as an outcome measure to evaluate such interventions.

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